Energy & Materials Flow & Cost Tracker (EMFACT)

Terri Goldberg
Northeast Waste Management Officials' Association

NEWMOA

Overview

- Background
- Purpose & Scope
- Development Process
- Big Picture
- Example
- Features
- Status

EMFACT Objectives

To assist small & medium-sized businesses in the U.S. to:

→ Better track & understand the use & flow of fuel, water, & materials through their facility

→ Better understand the actual costs of poor resource efficiency & subsequent waste management

→ Improved business decision-making & environmental performance

→ Implement a cycle of continuous improvement via continuous tracking

EMFACT Products

→ An easy-to-use, well-documented tool to assist small & medium-sized enterprises in tracking:

- fuel, water, & materials use
- generation of air emissions, wastewater, & solid/hazardous waste
- associated costs

→ User's guidance & training materials

→ Training for technical assistance providers

→ Online downloadable free access to the software application & support materials

EMFACT Team

→ US EPA *(funder)*

→ Northwest Waste Management Officials' Association (NEWMOA)

→ Massachusetts Office of Technical Assistance (Mass OTA)

→ SYS Technologies

→ EMARIC

→ Advisory Group (includes EPA)

Development Process

- Engaged Advisory Committee, TURPAs, example companies, & NEWMOA's Board
- Developed a Draft Request for Proposals (RFP)
- Held a vendors' meeting – Comments on Draft
- Issued final RFP – Held bidder's conference
- 5 proposals submitted
- Formed review committee
- Selected SYS Technologies
- Developed contract
- Developed systems & data requirements

Data Flow
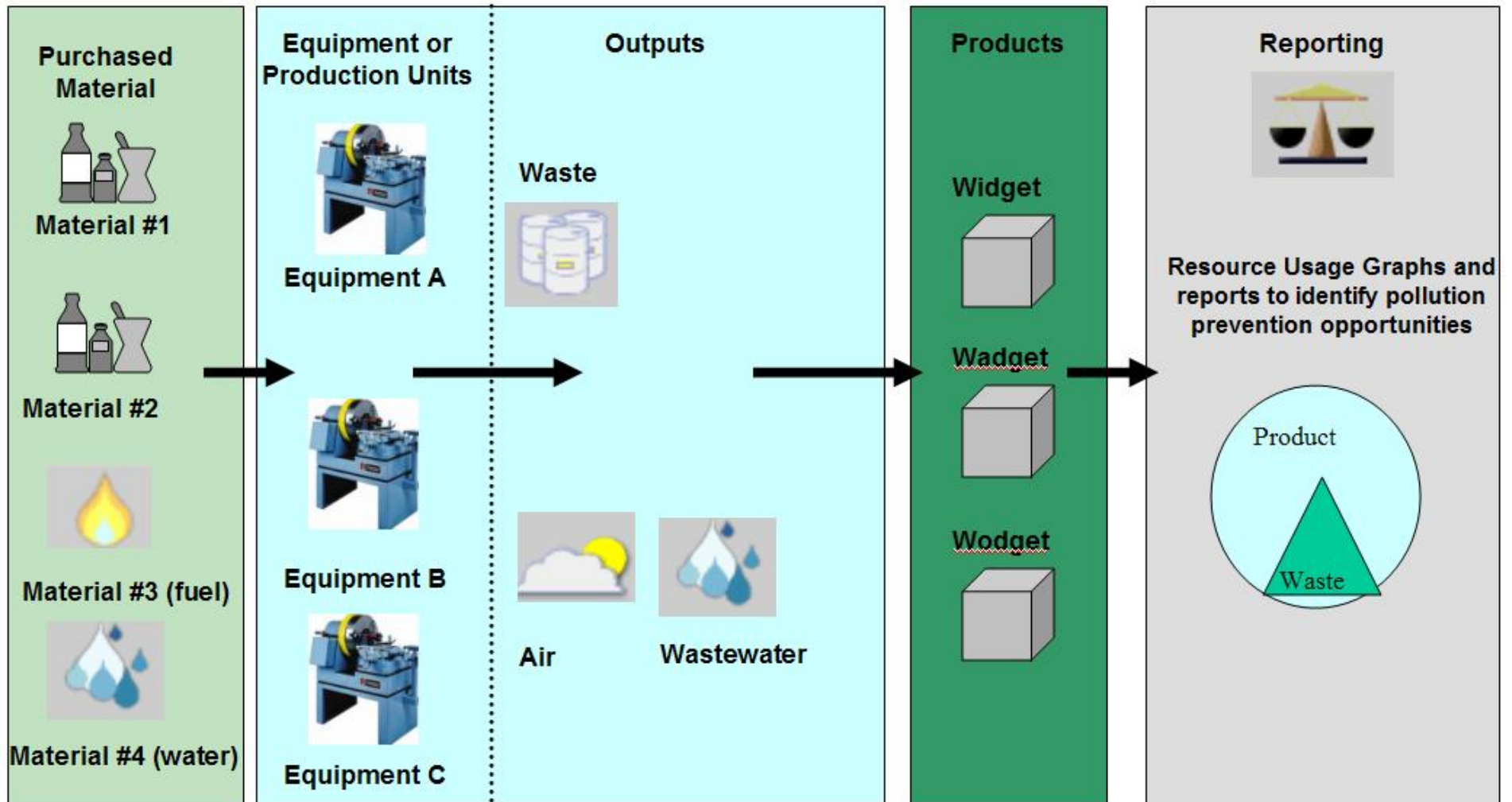
EMFACT Approach

→ User has the option to define:
- Organization (e.g., departments)
- Site & buildings
- Equipment, including waste management equipment
- Inputs (fuel, water, materials, chemical constituents)
- Intermediate & final products
- Non-product outputs (air, water, waste)

→ Link the components together

→ Populate with data, e.g., physical quantities, costs, emission factors

→ Analyze & report

EMFACT Dashboard

EMFACT Navigation
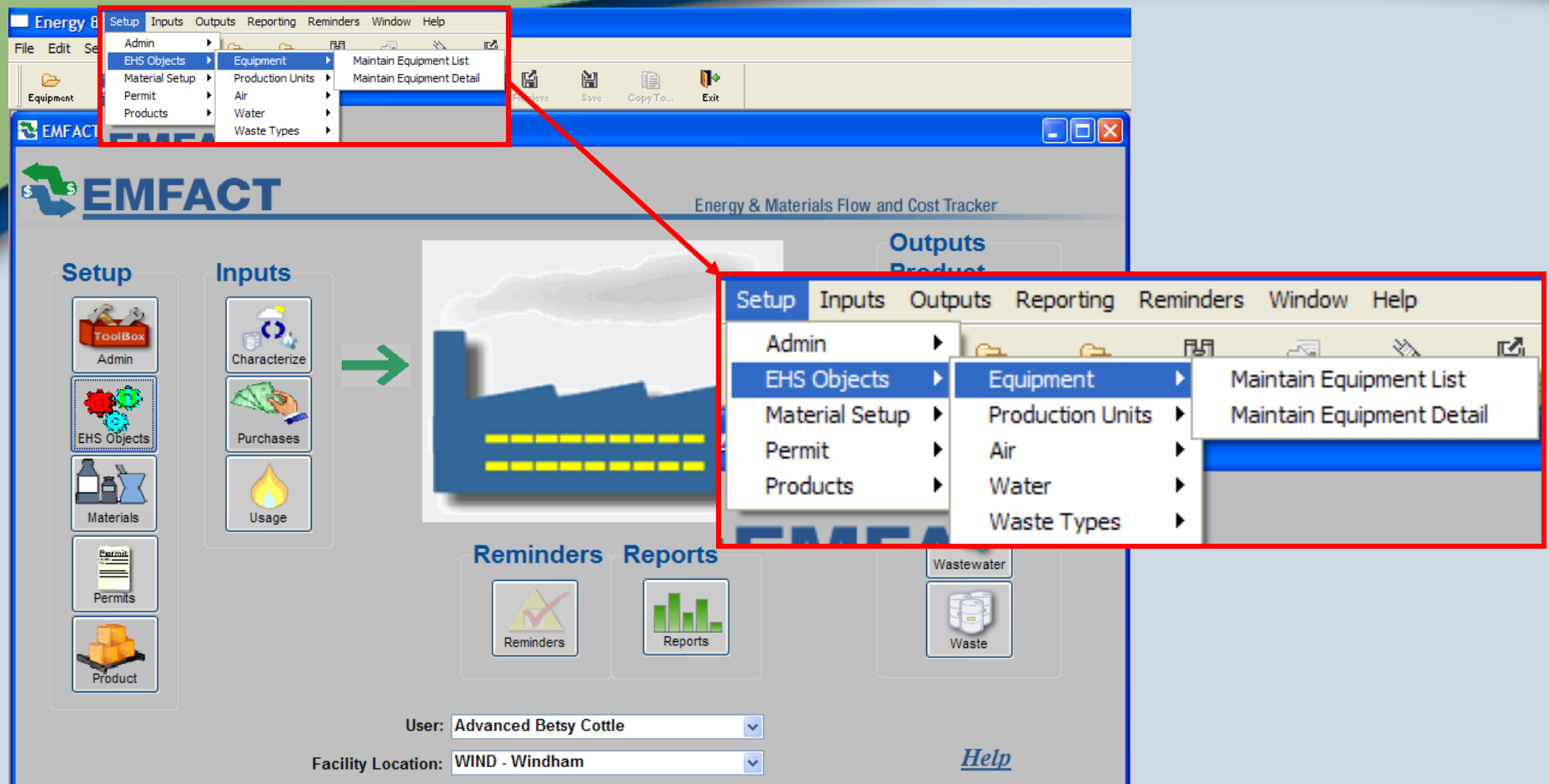
Menu paths are provided for all windows.

Clicking an icon, button, or menu path will open a new window for the indicated functionality.

EMFACT Example

Air Emissions from a Paint Booth

Define Process Equipment
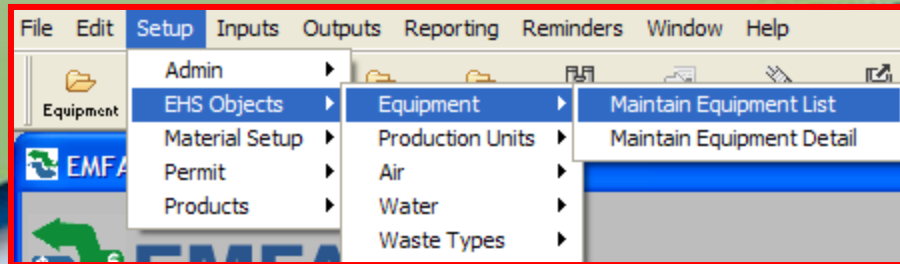
Add Paint Booth to the Equipment List - then add details.

Define Input Materials

Add paint to the Input Materials List - then add details.

Define Non-product Outputs

In the case of air emissions, determine emission factors for different pollutants.

Link Equipment, Inputs, & Outputs

File   Edit   Setup   **Inputs**   Outputs   Reporting   Reminders   Window   Help
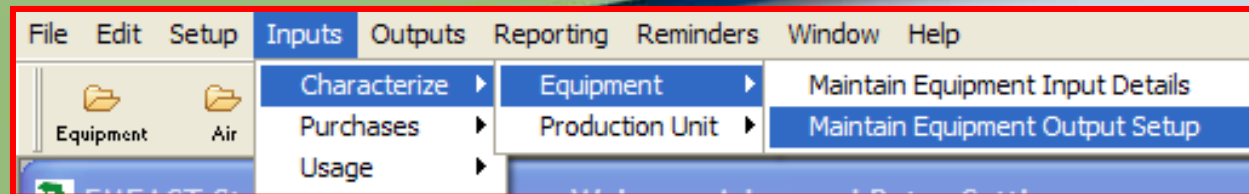
	Characterize ▶	Equipment ▶	Maintain Equipment Input Details
	Purchases ▶	Production Unit ▶	Maintain Equipment Output Setup
	Usage ▶		

Equipment   Air

EMEACT Start Page .... Welcome Advanced Betsy Cottle
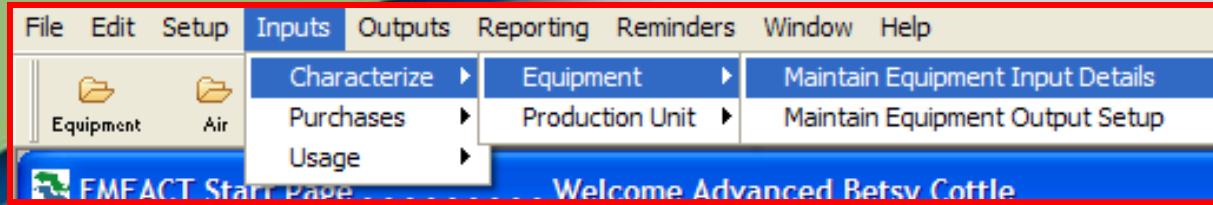
Link the Paint Input Material to the Paint Booth Equipment.

Maintain Equipment Input Details for: BOOTH #4

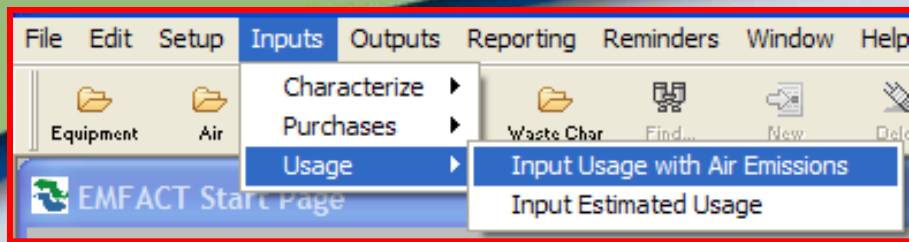**Equipment Id:** BOOTH #4   **Description:** Paint Spray Booth #4

Building: 100   Main Building

Location: East corner   **Updated:** 10/16/2007

Materials | Air Source | Discharge | Waste | Products

Material ID	Material Name	Material Type	Manufacturer Name	Active?
SPECIAL PAINT	Paint specific to Booths	PAINT	Paintco	☑

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Inputs – Enter Usage Data

Enter paint usage data.

Outputs – Auto Calculated *(in this case)*
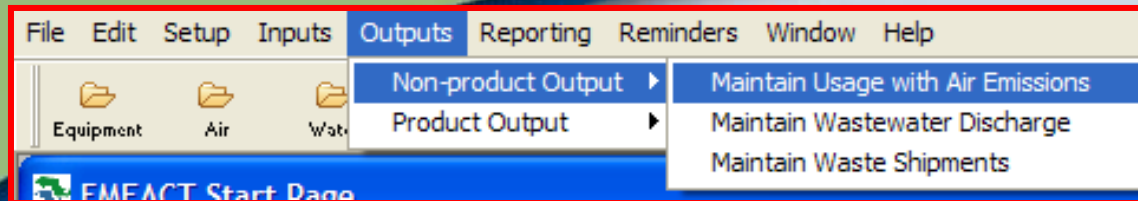
Emissions are automatically calculated in this case. Outputs will be manually entered in other cases, e.g., solid waste.

Report

Review paint usage with computed emissions by month & 12-month rolling totals.

Cost Data

→ EMFACT will also allow collection of relevant cost data; this feature is in an early stage of development.

→ Examples include:

- Materials purchase costs
- Waste management & disposal costs
- Others

Waste Shipments & Costs
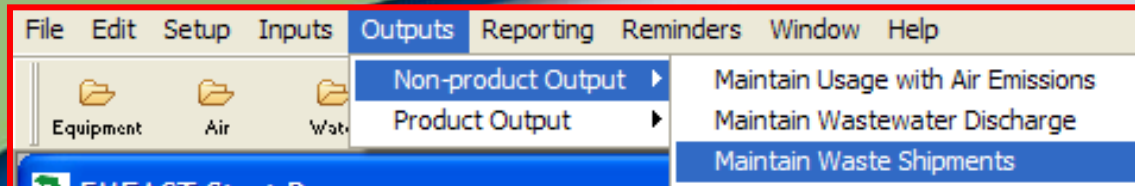
The Waste Shipment screen allocates back to the source, *tracks cost data*, & tracks other waste shipment information (date, manifest, vendor, etc.).

Compliance Information

→ A survey of potential users told us – regulatory compliance must be a component of EMFACT

→ So, EMFACT incorporates lists of regulated chemicals; tool can flag & report on these chemicals:

- SARA 313
- Hazardous Air Pollutants (HAPs) – federal & state
- Ozone Depleting Substances – Classes I & II

→ EMFACT also provides

- Ability for users to create their own chemical lists
- Screens to list/describe permits
- A calendar with event reminders (e.g., permit renewal)

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Examples of Reminders

Reminder Details

Summary Maintenance For Event Number: 0000004

Event No.: 0000004   Site Code: MYC   Due Date: 06/20/2008   Status: Open

Permit Renewal Due for: 2007-011   Location:

Desc:

Contact Person: 001   Liz Ostwald   Last Update: 07/20/2007

Event Filename: GO

Email Reminder

Initial Reminder Date:

Final Reminder Date:

Responsible Department

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Recurring Event

Recurring? ○ Yes ◉ No   Frequency: # of Occurrences: Event No.:

Create Recurring Events

Recurring

Event No.   Event Name   Final Reminder Due Date   Status

Lists of Regulated Chemicals
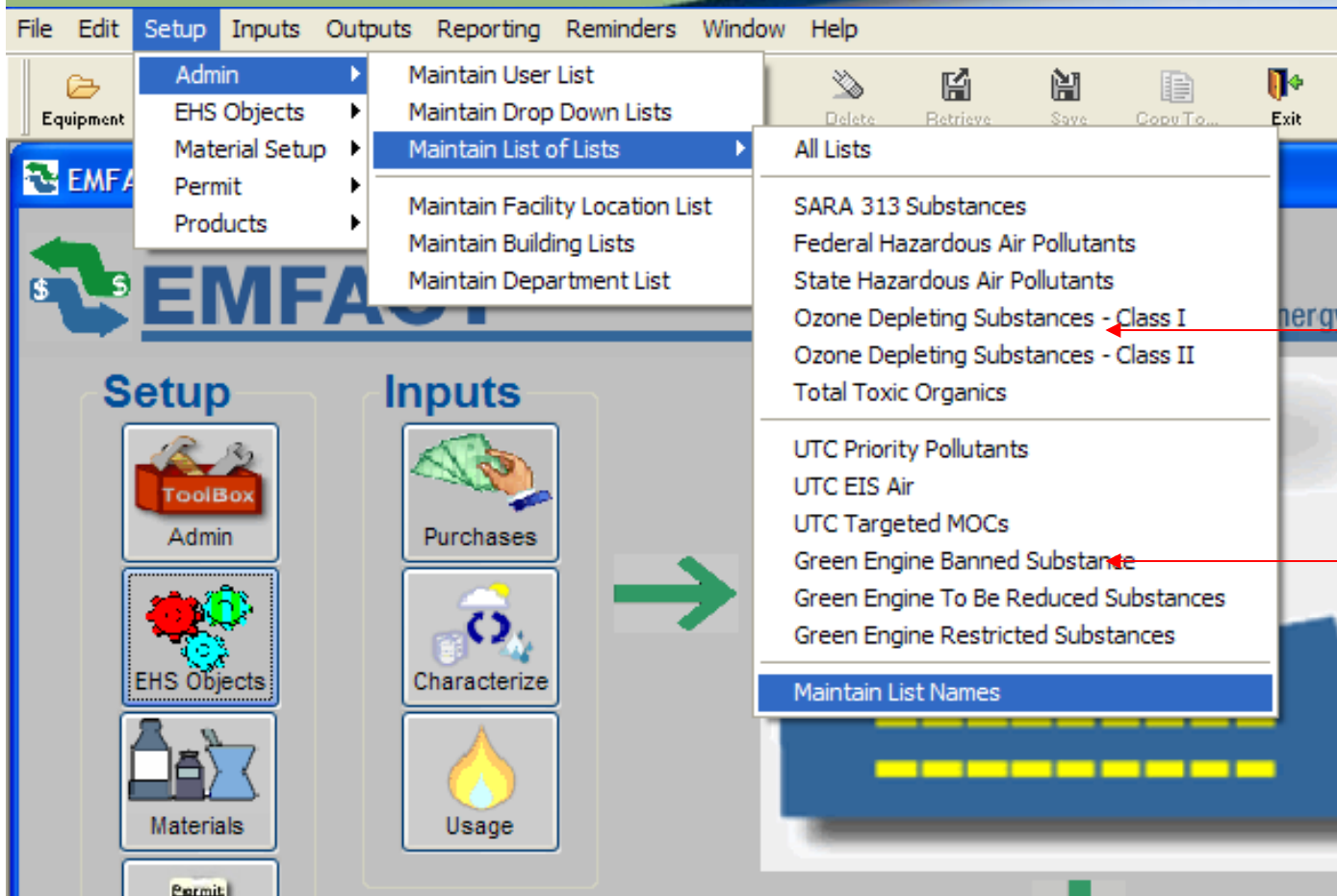
Preloaded lists

User-defined lists

What Kinds of Reports?

→ Lists of equipment & of materials/chemicals

→ Materials Use &/or Non-Product Output *per unit of product, per equipment, per production unit, for entire facility*

→ Materials Use - *incorporated into product vs. into non-product output*

→ Various cost reports

→ SEARCH window will enable searching by a variety of fields - output can be printed or saved to Excel

Example—Solid Waste

Waste Generated and Shipped Reports

Select Report:
Shipment Costs

Filter Report by:
- ⦿ Site
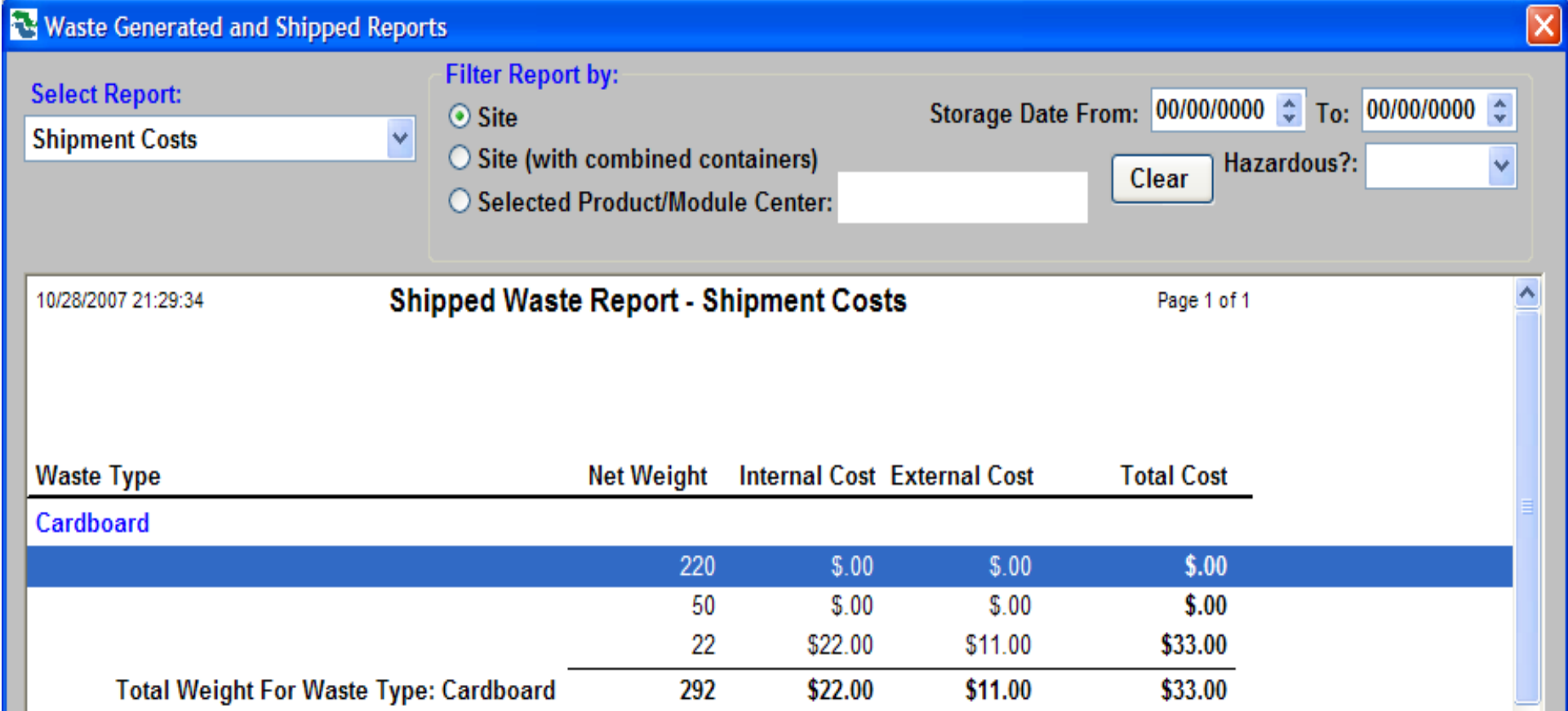- ○ Site (with combined containers)
- ○ Selected Product/Module Center:

Storage Date From: 00/00/0000 To: 00/00/0000

Clear   Hazardous?:

10/28/2007 21:29:34   **Shipped Waste Report - Shipment Costs**   Page 1 of 1

Waste Type	Net Weight	Internal Cost	External Cost	Total Cost
Cardboard				
	220	$.00	$.00	$.00
	50	$.00	$.00	$.00
	22	$22.00	$11.00	$33.00
Total Weight For Waste Type: Cardboard	292	$22.00	$11.00	$33.00

Example—Solid Waste

Waste Generated and Shipped Reports

Select Report:
Chargeback Costs

Filter Report by:
- ⦿ Site
- ○ Site (with combined containers)
- ○ Selected Product/Module Center:

Storage Date From: 00/00/0000 To: 00/00/0000

Clear   Hazardous?:

10/28/2007 21:28:52   **Shipped Waste Report - Chargeback Costs**   Page 1 of 1

Waste Type	Shipped Net Weight	Chargeback Rate	Extended Cost
Cardboard			
	220	3.25	$715.00
	50	3.25	$162.50
	22	3.25	$71.50
Total Weight For Waste Type: Cardboard	292		$949.00
Oil			
	100	120	$12,000.00
	2,200	120	$264,000.00
Total Weight For Waste Type: Oil	2,300		$276,000.00

Example—Chemical Usage

Chemical Usage Report

Find CAS No.:

From Date: 09-2007

To Date: 10-2007

Scope
- All detail
- CAS Summary
- CAS / Material Summary

10/28/2007   **Chemical Usage Report From 09-2007 To 10-2007**   Page 1 of 2

Note: All usage is in Lbs.

Chemical	Material	Chemical Usage Dept	Usage Date
10099-76-0	Lead Silicate		
SPECIAL PAINT	Paint specific to Booths		
	Total for Paint specific to Booths:	35.55	
	Total for Lead Silicate:	35.55	
11120-22-2	Lead Silicate		
GLIDDEN1	Glidden Eggshell Paint		
	Total for Glidden Eggshell Paint:	708.2795	
	Total for Lead Silicate:	708.2795	

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User Flexibility

→ Two user levels: basic & advanced

→ Can have multiple users

→ Can start small or big - for a single process or product line, or for the entire facility

→ Can do grouping

  ♦ Group individual pieces of equipment into "production units"

  ♦ Group similar pieces of equipment into equipment "categories", e.g., paint booths

EMFACT Help Features

"Cue-card" type menus will be provided for the basic user to guide them through a logical series of windows.
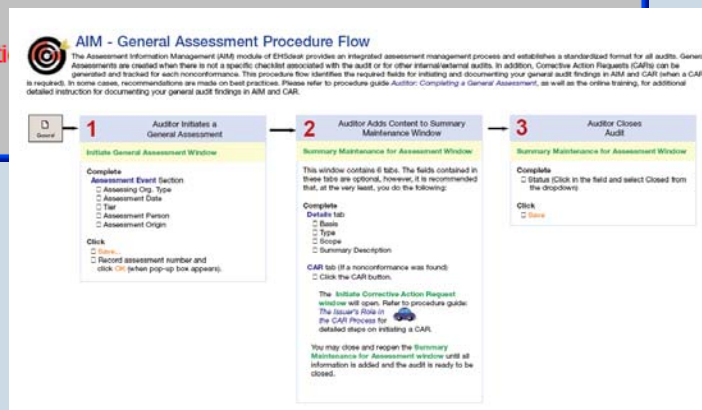
Other user documentation will include process flows & procedure guides.
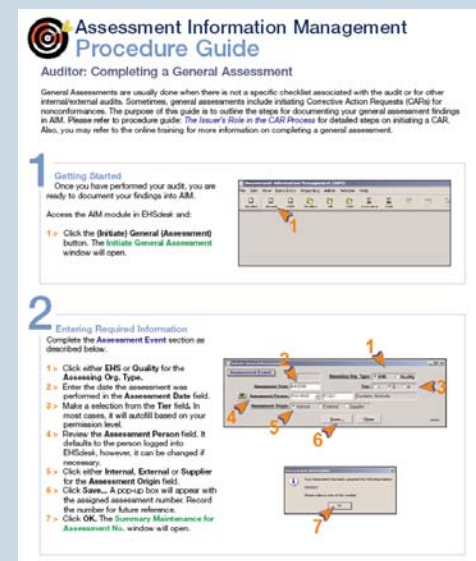
EMFACT Development Status

→ Development will continue for another 2-4 weeks

→ Early (team) testing is ongoing

→ Formal testing start target is November – includes pilot training at facilities

→ Launch v1 in March 2008 *(downloadable for free!)*

For More Info...

http://www.newmoa.org/prevention/emfact

→ Terri Goldberg (NEWMOA):
  tgoldberg@newmoa.org

→ Rick Reibstein (MASS OTA):
  rick.reibstein@state.ma.us